2013 Title 24 Res ACM - DHW

California Statewide Utility Codes and Standards Program

Heschong Mahone Group, Inc.
Energy Solutions

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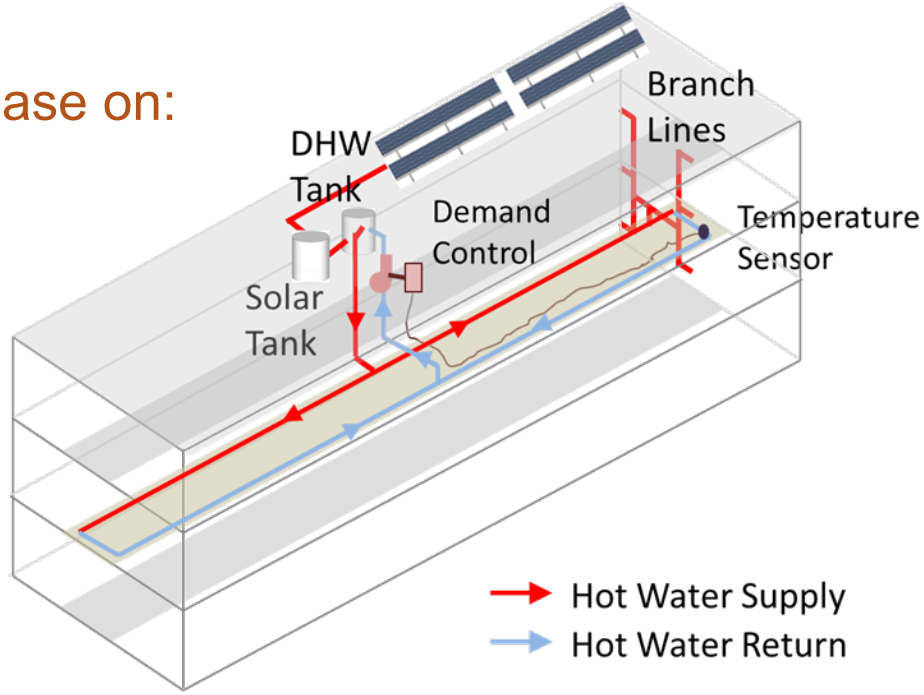
MF DHW ACM – 2013 Update

- Standard Design Updated – Prescriptive Requirement
  - Distribution: two-loop recirculation with demand control
  - Solar water heating: SF by CZ
- Four Components of Hourly Adjusted Recovery Load (HARL)
  - Hourly end use adjusted by in-unit distribution loss
    - HW supply Temp: 135F to 130 F
  - Solar WH – offset hourly end use (not distribution loss)
  - **Central recirculation system heat loss**
    - Performance of controls
    - Recirculation plumbing designs
    - Branch pipe performance
  - Storage tank surface heat loss – no change

MF DHW ACM – Standard Recirc. Design

- Pipe Heat Loss Model Adapted from PIER Study Results
  - Model validated by field monitoring results
  - Plumbing designs based on field survey (>30 buildings)
- Standard Design
  - Streamlined piping design base on:
    - # of unit, story, and floor area
  - Two-loop design
    - Smaller pipe size



MF DHW ACM – Proposed Design

- Use default or User-input Design
  - Recirculation loop represented by 6 pipe sections
- Default Design
  - Less optimized design than the standard design
    - Slightly longer pipe than the standard design
    - Better than most designs observed in the field
  - One-loop design: Pipe size larger than standard design
- User-input Design – Pipe surface area validated/adjusted
  - HERS verified dual-loop design – validated by standard design
  - All Others - validated by the default design

MF DHW ACM – Branch Pipe

- Branch pipe
  - Between recirc. loops and pipes within units
- Standard Design Same as Default Design
  - Number of branch → number of unit /floor
  - Pipe length → number of floors
  - Pipe diameter → number of unit served
- Performance Calculation
  - Pipe heat loss during usage
  - Water/energy for waiting hot water